

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Patent Application of:

Robert J. BRISCOE, *et al.*

Serial No.: 10/593,442

Filed: September 19, 2006

For: TREATMENT OF DATA IN NETWORKS



Atty. Ref.: LSN-36-2011

T.C./A.U.: 2416 – Conf. No.: 9938

Examiner: Omar J. Ghowrwal

* * * * *

July 7, 2010

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

INFORMATION NOTIFICATION LETTER

The Examiner's Rule 56 reminder at page 2 of the final office action dated March 8, 2010, is unclear as to whether he does or does not wish the record of this present application to become ever further encumbered by copies of office actions and responses of record in related application Serial No. 10/593,423 – which is being concurrently examined by the same Examiner.

Robert J. BRISCOE, *et al.*
Serial No. 10/593,442
July 7, 2010

Thus, even though all of this is already easily available to the Examiner via the USPTO's own electronic files (and presumably already known to this same common Examiner), copies are attached hereto of recent papers from that related application Serial No. 10/593,423:

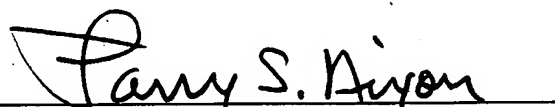
(a) response dated November 13, 2009

(b) office action dated February 18, 2010.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:


Larry S. Nixon
Reg. No. 25,640

LSN:lef

901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

SERIAL NO.

10/593,423

APPLICANT

Bob BRISCOE, *et al.*

FILING DATE

GROUP

September 19, 2006

2416

(Use several sheets if necessary)

[illegible]

DOCUMENT							DATE		COUNTRY		CLASS	SUBCLASS	TRANSLATION	
													YES	NO
		99/23799					05/1999		WO					

[illegible]

*Examiner

Date Considered

Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609. Draw a line through citation if not in conformance and not considered. Return an initialled copy of this form with next communication to applicant.

Receipt date: 11/13/2009

10593423 - GAU: 2463

**INFORMATION DISCLOSURE
CITATION**

~~ATTY. DOCKET NO.~~

SERIAL NO.

LSN-36-2010

10/593,423

APPLICANT

Bob BRISCOE, *et al.*

FILING DATE

GROUP

September 19, 2006

2416

(Use several sheets if necessary)

U.S. PATENT DOCUMENTS

[illegible]

FOREIGN PATENT DOCUMENTS

DOCUMENT							DATE		COUNTRY		CLASS	SUBCLASS	TRANSLATION	
													YES	NO
		99/23799		05/1999		WO								

OTHER DOCUMENTS (including Author, Title, Date, Pertinent pages, etc.)

[illegible]

*Examiner

/Omar Ghowrwal/

Date Considered

02/02/2010

Examiner	Date Considered
<p>Examiner: Initial if reference is considered, whether or not citation is in conformance with MPEP 609. Draw a line through citation if not in conformance and not considered. Return an initialled copy of this form with next communication to applicant.</p>	

~~ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. (O.G.)~~

Sheet 1 of 1

10593442 - GAU: 2416

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APPLICANT

FILING DATE

SERIAL NO.

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Unknown

(Use several sheets if necessary)

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07/29/2009

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Initial this form with next communication to applicant.

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ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /O.G./



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,423	09/19/2006	Bob Briscoe	36-2010 <i>LSN</i>	1267

23117 7590 02/18/2010
NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203



EXAMINER

GHOWRWAL, OMAR J

ART UNIT	PAPER NUMBER
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2463

MAIL DATE	DELIVERY MODE
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02/18/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

FINAL
DOCKETED

DUE DATE May 18, 2010

FINAL DEADLINE AUG 18, 2010

DOCKETED BY *[Signature]* MP

Office Action Summary

Application No.

10/593,423

Applicant(s)

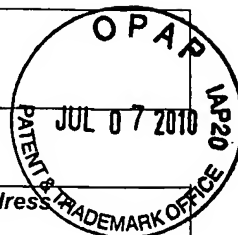
BRISCOE ET AL.

Examiner

OMAR GHOWRWAL

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Response to Remarks

1. This Office action is considered fully responsive to the amendment filed 11/13/09.
2. The Examiner thanks Applicant for bringing the co-pending application to the Examiner's attention. However, as a reminder, Applicant has the duty to disclose for the filing of >a< application (37 CFR 1.56) which is not limited to just the dealing with the Examiner (MPEP 2001.03). Also, in view on MPEP 2001.06(b) Applicant has the burden of presenting the Examiner with a complete and accurate record to support the allowance of letters patent.
3. The objection to the drawings has been withdrawn because they have been amended accordingly.
4. The rejections under U.S.C. 112 have been upheld because although Applicant stated the claims have been amended to delete "such as" (page 26, Remarks), when looking at the set of claims, these terms have not been deleted from the claims.

Response to Arguments

5. Applicant's arguments filed 11/13/09 have been fully considered but they are not persuasive.

Applicant argues that Cain does not teach anything corresponding to a "target condition for the path characterization metric" (page 28, Remarks), with respect to claim

1. The Examiner respectfully disagrees. As was previously cited, para. 0033 of Cain teaches "a destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route". As is discussed in

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paras. 0031-0032, the source node transmits a QoS request with a particular "QoS metric". Hence, this initial "QoS metric" is in fact the "target condition", since it is what the source node desires for a particular route. After the RREQQ packet containing this metric traverses the network, and at each node this metric is "updated", hence it changes, and it eventually arrives at the destination node. The destination node then replies back to the source node with a packet containing the "updated QoS metric", which is not the same as the initial "QoS metric", hence there is a discrepancy between the two. This is further shown to be the case as para. 0033 also describes the source node generating new QoS metrics based on the discrepancy caused by the updated QoS metrics and the initial QoS metrics that this node generated before.

Additionally, also note paras. 0034-0035 of Cain, which can also be used to teach this limitation, as an error notification RERRQ from the destination node to the source node indicating that it cannot support the initial QoS metric (target condition), thus indicating a discrepancy, and after this the source node can repeat the RREQQ procedure.

The same arguments hold against the other independent claims that Applicant has argued against the Cain reference regarding the same limitation as claim 1.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. **Claims 4-5, 13** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. Regarding **claims 4-5, 13**, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. **Claims 1-3, 6-12, 14-16, 20-23, 28-31** are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Publication No. 2003/0202469 A1 to *Cain*.

As to **claim 1**, *Cain* discloses a data network comprising a provider node, a receiver node, and a plurality of intermediate nodes (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5), the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said intermediate nodes being arranged to receive data and forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from at least one intermediate node or from the provider node (para. 0031-0033, data received at intermediate nodes, sent to destination node); wherein:

said data comprises at least a part which relates to a path characterization metric (para. 0031, sending RREQQ from node 1 which includes QoS link metric);

said provider node is arranged to assign an initial condition to the path characterization metric in respect of data provided by it (para. 0031, QoS parameter is requested);

said intermediate nodes are arranged to update the condition of the path characterization metric in respect of data they forward (para. 0032, intermediate node can update QoS link metric);

said receiver node is arranged to make available for the provider node information indicative of a discrepancy between the condition of the path characterization metric in respect of data received by it and a predetermined target condition for the path characterization metric (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route);

and wherein said provider node is arranged to assign a different initial condition to the path characterization metric in respect of subsequent data provided by it in the event that it receives information indicative of such a discrepancy from said receiver node (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 2, *Cain* further discloses a data network according to claim 1, wherein the condition of the path characterization metric at a node is indicative of a measure of congestion expected to be experienced by data on a path downstream of that node (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability).

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As to claim 3, *Cain* further discloses a data network according to claim 1, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

As to claim 6, *Cain* further discloses a data network according to claim 1, wherein an intermediate node is arranged to update the condition of the path characterization metric in response to a path characteristic associated with that node (para. 0032, if an intermediate node can support the QoS parameter of a particular request RREQQ, the node updates the QoS link metric).

As to claim 7, *Cain* further discloses a data network according to claim 6, wherein said path characteristic relates to a measure of congestion on a path associated with that node (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability).

As to claim 8, *Cain* further discloses a data network according to claim 6 wherein said path characteristic relates to a measure of congestion on a path downstream of that node (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability).

As to claim 9, *Cain* discloses a method for assigning path characterization metrics to data in a data network comprising a provider node, a receiver node, and a plurality of intermediate nodes (fig. 1, para. 0031, source 1, destination 4, intermediates

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2, 3, 5), the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said data comprising at least a part which relates to a path characterization metric, said intermediate nodes being arranged to receive data and forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from at least one intermediate node or from the provider node (para. 0031-0033, data received at intermediate nodes, sent to destination node); the method comprising steps of:

assigning an initial condition to the path characterization metric in respect of data provided by the provider node (para. 0031, QoS parameter is requested);

updating the condition of the path characterization metric in respect of data forwarded by said intermediate nodes (para. 0032, intermediate node can update QoS link metric);

monitoring a final condition of the path characterization metric in respect of data received by the receiver node, and determining a measure indicative of a discrepancy between said final condition and a predetermined target condition for the path characterization metric (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route);

and assigning a different initial condition to the path characterization metric in respect of subsequent data provided by the provider node in the event that said measure indicates such a discrepancy in respect of previous data (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 10, *Cain* further discloses a method according to claim 9, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

As to claim 11, *Cain* discloses a feedback node for enabling an initial condition to be assigned to a path characterization metric in respect of data to be forwarded through a data network (para. 0031-0033, receiver node sends reply back to request node (feedback node) that includes flow identifier and updated QoS metric, feedback node then generates QoS route metrics based on reply), said data network comprising a provider node, a receiver node and a plurality of intermediate nodes, said data comprising at least a part which relates to a path characterization metric (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter); said provider node being arranged to assign an initial condition to the path characterization metric in respect of data, and to provide said data to at least one of said intermediate nodes or to the receiver node (paras. 0031-0033, requested QoS parameter by sending node, sent to intermediates then to receiver); said intermediate nodes being arranged to receive data from said provider node or from one or more other intermediate nodes, to update a condition of the path characterization metric in respect of data received by them, and to forward data to at least one other intermediate node or to the receiver node (para. 0032, updating QoS link metric); and said receiver node being arranged to receive data from

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at least one intermediate node or from the provider node, and to make available for the feedback node information relating to the path characterization metric in respect of data received by it (para. 0031-0033, receiver node sends reply back to request node (feedback node) that includes flow identifier and updated QoS metric), said feedback node comprising:

at least one message processor arranged to enable a different initial condition to be assigned to the path characterization metric in respect of subsequent data provided by the provider node in the event that said feedback node receives information indicative of a discrepancy between a predetermined target condition for the path characterization metric and the condition of the path characterization metric in respect of previous data received by said receiver node (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route, para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 12, *Cain* further discloses a feedback node according to claim 11, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

As to claim 14, *Cain* further discloses a feedback node according to claim 11, said feedback node also serving as said provider node in said network (para. 0031-

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0033, receiver node sends reply back to request node (feedback node) that includes flow identifier and updated QoS metric).

As to claim 15, *Cain* further discloses a feedback node according to claim 14, said feedback node being arranged to assign a different initial condition to the path characterization metric in respect of subsequent data in the event that it receives, from said receiver node, a measure of a discrepancy between said predetermined target condition for the path characterization metric and the condition of the path characterization metric in respect of previous data received by said receiver node (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route, para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 16, *Cain* further discloses a feedback node according to claim 14, said feedback node being arranged to assign a different initial condition to the path characterization metric in respect of subsequent data in the event that it receives, from said receiver node, information indicative of the condition of the path characterization metric in respect of previous data received by said receiver node, and determines that there is a discrepancy between said condition of the path characterization metric and said predetermined target condition for the path characterization metric (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route, para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

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As to **claim 20**, *Cain* discloses a method of providing data in a data network comprising a provider node, a receiver node and a plurality of intermediate nodes, the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said data comprising at least a part which relates to a path characterization metric (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter); said intermediate nodes being arranged to receive data from said provider node or from one or more other intermediate nodes, to update a condition of the path characterization metric in respect of data received by them, and to forward data to at least one other intermediate node or to the receiver node (para. 0032, updating QoS link metric, paras. 0031-0033, data sent from source to intermediates to destination); and said receiver node being arranged to receive data from at least one intermediate node or from the provider node, and to make available for the provider node information indicative of a discrepancy between an eventual condition of the path characterization metric in respect of data received by it and a predetermined target condition for the path characterization metric (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route); the method comprising the steps of:

assigning an initial condition to the path characterization metric in respect of data (para. 0031, QoS parameter is requested);

providing said data to at least one of said intermediate nodes (para. 0032, intermediate node can update QoS link metric);

receiving information relating to said eventual condition of the path characterization metric in respect of previously-provided data received by said receiver node (para. 0031-0033, reply RREPQ contains updated QoS link metric);

and assigning a different initial condition to the path characterization metric in respect of subsequent data in the event of receipt of information indicative of a discrepancy between said eventual condition of the path characterization metric and a predetermined target condition for the path characterization metric (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 21, *Cain* further discloses a method according to claim 20, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

As to claim 22, *Cain* further discloses a method according to claim 20, said receiver node being arranged to make available for the provider node a measure of a discrepancy between said predetermined target condition for the path characterization metric and said eventual condition of the path characterization metric in respect of previous data received, whereby to enable said provider node to assign a different initial condition to the path characterization metric in respect of subsequent data (para. 0033,

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upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 23, *Cain* further discloses a method according to claim 20, said receiver node being arranged to make available for the provider node information indicative of the condition of said eventual path characterization metric in respect of previously received data, whereby to enable said provider node to assign a different initial condition to the path characterization metric in respect of subsequent data in the event that said provider node determines that there is a discrepancy between said condition of the path characterization metric and said predetermined target condition for the path characterization metric (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to **claim 28**, *Cain* discloses a path characterization system for providing path characterization information in association with a data network, said data network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter); the path characterization system comprising:

a path characterization metric condition assigning means, associated with the provider node, arranged to assign an initial condition to a path characterization metric in

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the event that said provider node provides data (para. 0031, QoS parameter is requested);

a path characterization metric updating means, associated with an intermediate node, arranged to update the condition of the path characterization metric in the event that said node receives data (para. 0032, intermediate node can update QoS link metric);

and a path characterization metric feedback means, associated with the receiver node, arranged to determine an eventual condition of the path characterization metric in the event that said receiver node receives said data, and to make available for the path characterization metric condition assigning means information indicative of a discrepancy between the eventual condition of the path characterization metric and a predetermined target condition for the path characterization metric (para. 0031-0033, reply RREPQ contains updated QoS link metric);

wherein said path characterization metric condition assigning means is arranged to assign a different initial condition to a path characterization metric associated with subsequent data in the event that feedback is made available indicative of such a discrepancy between the eventual condition of the path characterization metric and the predetermined target condition in relation to a previous path characterization metric (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 29, *Cain* further discloses a path characterization system according to claim 28, wherein the condition assigned to the path characterization metric is a

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value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

As to **claim 30**, *Cain* discloses a path characterization system for providing path characterization information in association with a data network, said data network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter); the path characterization system comprising:

a path characterization metric condition assigning means, associated with the provider node, arranged to assign a path characterization metric with an initial condition in the event that said provider node provides data, said path characterization metric being associated with said data (para. 0031, QoS parameter is requested);

a path characterization metric updating means, associated with a node capable of receiving data, arranged to update the condition of the path characterization metric in the event that said node receives data (para. 0032, intermediate node can update QoS link metric);

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and a path characterization metric feedback means, associated with the receiver node, arranged to determine an eventual condition of the path characterization metric in the event that said receiver node receives said data, and to make available for the path characterization metric condition assigning means information relating to the eventual condition of the path characterization metric (para. 0031-0033, reply RREPQ contains updated QoS link metric);

wherein said path characterization metric condition assigning means is arranged to provide information relating to the eventual condition of the path characterization metric associated with previous data in the event that feedback is made available indicative of a discrepancy between the eventual condition of the path characterization metric and a predetermined target condition in relation to a previous path characterization metric (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

As to claim 31, *Cain* further discloses a path characterization system according to claim 30, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values).

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **Claims 4-5, 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2003/0202469 A1 to *Cain* in view of U.S. Patent No. 7,433,311 B1 to *Kalyanasundaram et al.* ("*Kal*").

As to claim 4, *Cain* further discloses a data network according to claim 1, wherein in the event that said provider node assigns a different initial condition to the path characterization metric in respect of subsequent data provided by it, said different initial condition is assigned such as to comply with receiver replies RREPQ in respect of said subsequent data received by said receiver node (para. 0033, fig. 4, updating QoS and sending out CONFQ messages to the receiver).

Cain does not expressly discloses a data network according to claim 1, wherein in the event that said provider node assigns a different initial condition to the path characterization metric in respect of subsequent data provided by it, said different initial condition is assigned such as to decrease a corresponding discrepancy in respect of said subsequent data received by said receiver node.

Kal discloses calculating a new value for a current resource setting that more closely approximates a value of an actual resource setting of the resource of the communications channel (fig. 2, item 202-2). Furthermore, this is performed by a client (provider) device (col. 14, lines 15-19) and the new value is sent to a network resource allocator (receiver) (fig. 2, item 202-3), i.e. discrepancy between the two values is decreased and this is sent to the receiver from the provider. Moreover, the reason for

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calculating a new value is based upon a detection of a negotiation event (col. 16, lines 14-16).

Cain and *Kal* are analogous art because they are from the same field of endeavor regarding data processing.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to incorporate the approximating a new value of a resource setting as taught by *Kal* into the invention of *Cain*. The suggestion/motivation would have been to adjust allocation of a resource in a data communications channel (*Kal*, col. 9, lines 10-13).

As to claim 5, *Cain* and *Kal* further disclose a data network according to claim 4, wherein said different initial condition is assigned such as to maximize the possibility that said corresponding discrepancy in respect of said subsequent data received by said receiver node will be zero (*Kal*, fig. 2, item 202-2, 202-3, more closely approximating a value, which pertains to having zero discrepancy). In addition, the same suggestion/motivation of claim 4 applies.

As to claim 13, see similar rejection for claim 4. The method teaches the node.

12. **Claims 17-19** rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2003/0202469 A1 to *Cain* in view of U.S. Patent No. 6,633,538 B1 to *Tanaka et al.* ("*Tanaka*").

As to claim 17, *Cain* does not expressly disclose a feedback node according to claim 11, said feedback node also serving as said receiver node in said network.

Tanaka discloses duplicating the resource of the master node to each slave node and the master node representing the functions of each slave node while duplicating (abstract), i.e. a node (feedback) also can function as another node (receiver).

Cain and *Tanaka* are analogous art because they are from the same field of endeavor regarding data processing.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to incorporate the duplication process as taught by Tanaka into the invention of Cain. The suggestion/motivation would have been to represent the functions of a node stopped (Tanaka, col. 1, lines 7-11).

As to claim 18, *Cain* and *Tanaka* further disclose a feedback node according to claim 17, said feedback node being arranged to make available for the provider node a measure of a discrepancy between said predetermined target condition for the path characterization metric and the condition of the path characterization metric in respect of previous data received by said receiver node, whereby to enable said provider node to assign a different initial condition to the path characterization metric in respect of subsequent data (Cain, para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route, para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics). In addition, the same suggestion/motivation of claim 17 applies.

As to claim 19, *Cain* and *Tanaka* further disclose a feedback node according to claim 17, said feedback node being arranged to make available for the provider node

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information indicative of the condition of the path characterization metric in respect of previous data received by said receiver node, whereby to enable said provider node to assign a different initial condition to the path characterization metric in respect of subsequent data in the event that said provider node determines that there is a discrepancy between said condition of the path characterization metric and said predetermined target condition for the path characterization metric (Cain, para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route, para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics). In addition, the same suggestion/motivation of claim 17 applies.

13. **Claims 24-27** rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2003/0202469 A1 to *Cain* in view of U.S. Publication No. 2003/0189901 A1 to *Ozugur et al.* ("*Ozugur*").

As to **claim 24**, *Cain* discloses a method for providing path characterization information for nodes in a network, said network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter), the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node

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(para. 0031-0033, data sent from sender to intermediate to receiver); the method comprising steps of:

assigning an initial condition to a path characterization metric in the event that said provider node provides data, said path characterization metric being associated with said data (para. 0031, QoS parameter is requested);

updating the condition of the path characterization metric in the event that an intermediate node receives said data (para. 0032, intermediate node can update QoS link metric);

determining an eventual condition of the path characterization metric in the event that said receiver node receives said data (para. 0031-0033, reply RREPQ contains updated QoS link metric);

and establishing if a discrepancy exists between the eventual condition of the path characterization metric and a predetermined target condition (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics);

wherein, in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition, said method further comprises steps of:

assigning a different initial condition to a further path characterization metric in the event that said provider node subsequently provides further data, said further path characterization metric being associated with said further data (para. 0033, upon

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receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics);

Cain does not expressly disclose updating the condition of said further path characterization metric in the event that an intermediate node receives said further data; and making information indicative of said updated condition available to said intermediate node.

Ozugar discloses after sending out Resv messages, the Upstream Ground Zero node propagates the new total number of LSPs in Rev messages to the LSPs in the current congestion set (fig. 5, para. 0042-0045).

Cain and *Ozugar* are analogous art because they are from the same field of endeavor regarding data processing.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to incorporate the Resv messages as taught by *Ozugar* into the invention of *Cain*. The suggestion/motivation would have been to inform LSPs of the updated information (*Ozugar*, fig. 5, para. 0042-0045).

As to claim 25, *Cain and Ozugar* further disclose a method according to claim 24, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (*Cain*, para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values). In addition, the same suggestion/motivation of claim 24 applies.

As to **claim 26**, *Cain* discloses a method for providing path characterization information for nodes in a network, said network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node (fig. 1, para. 0031, source 1, destination 4, intermediates 2, 3, 5, QoS parameter), the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node (para. 0031-0033, data sent from sender to intermediate to receiver); the method comprising steps of:

assigning an initial condition to a path characterization metric in the event that said provider node provides data, said path characterization metric being associated with said data (para. 0031, QoS parameter is requested);

updating the condition of the path characterization metric in the event that an intermediate node receives said data (para. 0032, intermediate node can update QoS link metric);

determining an eventual condition of the path characterization metric in the event that said receiver node receives said data (para. 0031-0033, reply RREPQ contains updated QoS link metric);

and establishing if a discrepancy exists between the eventual condition of the path characterization metric and a predetermined target condition (para. 0033, upon

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receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics);

wherein, in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition, said method further comprises steps of:

assigning a different initial condition to a further path characterization metric in the event that said provider node subsequently provides further data, said further path characterization metric being associated with said further data (para. 0033, upon receiving RREPQ, the source node 1 generates QoS route metrics based upon updated QoS link metrics).

and making information relating to the discrepancy between the eventual condition of a previous path characterization metric and said predetermined target condition available to said provider node (para. 0033, destination node generates reply RREPQ to source node 1 including flow identifier and updated QoS link metric for each discovered route).

Cain does not expressly disclose updating the condition of said further path characterization metric in the event that an intermediate node receives said further data;

and making information indicative of said updated condition available to said intermediate node;

and making information relating to the discrepancy between the eventual condition of a previous path characterization metric and said predetermined target condition available to said *intermediate node*.

Ozugar discloses after sending out Resv messages, the Upstream Ground Zero node propagates the new total number of LSPs in Rev messages to the LSPs in the current congestion set (fig. 5, para. 0042-0045), i.e. the previous Resv messages had a different number of hops, and this discrepancy is fixed and reported to LSPs in the next set of Resv messages.

Cain and *Ozugar* are analogous art because they are from the same field of endeavor regarding data processing.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to incorporate the Resv messages as taught by *Ozugar* into the invention of *Cain*. The suggestion/motivation would have been to inform LSPs of the updated information (*Ozugar*, fig. 5, para. 0042-0045).

As to claim 27, *Cain and Ozugar* further disclose a method according to claim 26, wherein the condition assigned to the path characterization metric is a value, and the predetermined target condition is a value (*Cain*, para. 0031, QoS parameter is based upon end-to-end delay, end-to-end delay variation, expected path durability, i.e. these are values, hence both the initial metric (predetermined target condition) and the updated metric (path characterization metric) are values). In addition, the same suggestion/motivation of claim 26 applies.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OMAR GHOWRWAL whose telephone number is (571)270-5691. The examiner can normally be reached on Monday-Thursday, 8:00am-5:00pm est..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Derrick Ferris can be reached on (571)272-3123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/O. G./
Examiner, Art Unit 2463

/Derrick W Ferris/
Supervisory Patent Examiner, Art Unit 2463

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

In re Patent Application of:

Bob BRISCOE, *et al.*

Serial No.: 10/593,423

Filed: September 19, 2006

For: NETWORKS



Atty. Ref.: LSN-36-2010

T.C./A.U.: 2416 — Conf. No.: 1267

Examiner: Omar J. Ghowrwal

* * * * *

November 13, 2009

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

AMENDMENT UNDER 37 C.F.R. §1.111

Responsive to the office action dated July 13, 2009, for which applicants hereby petition for a one month extension of time, please amend the above-identified application as follows:

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AMENDMENTS TO THE ABSTRACT:

Please amend the Abstract as follows:

~~The invention relates to data~~ Data networks[[,]] and [to]] nodes making up parts of data networks[[,]] are arranged to derive information relating to the ~~characterisation~~ characterization of paths taken by data travelling between nodes in the networks. Path ~~characterisation~~ characterization information is fed back from a receiver of data to a provider of data, and informs nodes subsequently forwarding data of characteristics of the downstream path. Also described are routing and related controlling nodes and methods for using such path ~~characterisation~~ characterization information to make informed routing and other decisions when forwarding data in a data network.

AMENDMENTS TO THE SPECIFICATION:

Page 1, immediately following the title of the invention, insert the following heading and sub-heading:

BACKGROUND

1. Technical Field

Page 1, line 16: delete "Background" and insert the following sub-heading:

2. Related Art

Page 2, 2nd full paragraph:

The next field is an 8-bit "Time-To-Live" (TTL) field, which aims to prevent datagrams from persisting (e.g. going around in loops) within a network. Historically, the TTL field limited a datagram's lifetime in seconds, but it has come to be a "hop count" field, with some attempt to maintain the original meaning by hops across large distances making themselves appear as multiple hops. The value may initially set at 255. Each packet switch (or router) that the datagram crosses decrements the TTL field by one (or maybe more at interfaces to long distance links). If the TTL field hits zero before reaching its intended destination, the packet is no longer forwarded by a packet switch and is thus discarded.

Page 5, line 12: delete "Summary of the Invention" and insert the following heading:

BRIEF SUMMARY

Page 6, 1st – 2nd full paragraphs:

As will be explained in more detail later, embodiments of the present invention allow for solutions to be provided, amongst others, to one or both of two general problems, which can be regarded as separate but related. These problems can be summarized ~~summarised~~ as follows:

- 1) How to arrange for the provision of information to nodes characterizing ~~characterising~~ the downstream path from ~~[[those]]~~ that node; and
- 2) How to proof this information from falsification.

According to the present exemplary embodiment ~~invention~~, there is provided a data network comprising a provider node, a receiver node, and a plurality of intermediate nodes, the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said intermediate nodes being arranged to receive data and forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from at least one intermediate node or from the provider node; wherein:

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Page 32, top of page: delete "CLAIMS" and insert the following heading:

WHAT IS CLAIMED IS:

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AMENDMENTS TO THE CLAIMS:

The following listing of claims supersedes all prior versions and listings of claims in this application:

1. (Currently Amended) A data network comprising:
a provider node, a receiver node, and a plurality of intermediate nodes,
the provider node being arranged to provide data to at least one of said
intermediate nodes or to the receiver node,
said intermediate nodes being arranged to receive data and forward data to at
least one other intermediate node or to the receiver node, and
the receiver node being arranged to receive data from at least one intermediate
node or from the provider node;
wherein:
said data comprises at least a part which relates to a path ~~characterisation~~
characterization metric;
said provider node is arranged to assign an initial condition to the path
~~characterisation~~ characterization metric in respect of data provided by it;
said intermediate nodes are arranged to update the condition of the path
~~characterisation~~ characterization metric in respect of data they forward;

said receiver node is arranged to make available for the provider node information indicative of a discrepancy between the condition of the path ~~characterisation~~ characterization metric in respect of data received by it and a predetermined target condition for the path ~~characterisation~~ characterization metric; and wherein

said provider node is arranged to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data provided by it in the event that it receives information indicative of such a discrepancy from said receiver node.

2. (Currently Amended) A data network according to claim 1, wherein the condition of the path ~~characterisation~~ characterization metric at a node is indicative of a measure of congestion expected to be experienced by data on a path downstream of that node.

3. (Currently Amended) A data network according to claim 1, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

4. (Currently Amended) A data network according to claim 1, wherein in the event that said provider node assigns a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data provided by it, said different initial condition is assigned such as to decrease a corresponding discrepancy in respect of said subsequent data received by said receiver node.

5. (Currently Amended) A data network according to claim 4, wherein said different initial condition is assigned such as to ~~maximise~~ maximize the possibility that said corresponding discrepancy in respect of said subsequent data received by said receiver node will be zero.

6. (Currently Amended) A data network according to claim 1, wherein an intermediate node is arranged to update the condition of the path ~~characterisation~~ characterization metric in response to a path characteristic associated with that node.

7. (Original) A data network according to claim 6, wherein said path characteristic relates to a measure of congestion on a path associated with that node.

8. (Previously Presented) A data network according to claim 6 wherein said path characteristic relates to a measure of congestion on a path downstream of that node.

9. (Currently Amended) A method for assigning path ~~characterisation~~ characterization metrics to data in a data network comprising a provider node, a receiver node, and a plurality of intermediate nodes, the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said data comprising at least a part which relates to a path ~~characterisation~~ characterization metric, said intermediate nodes being arranged to receive data and forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from at least one intermediate node or from the provider node; the method comprising steps of:

assigning an initial condition to the path ~~characterisation~~ characterization metric in respect of data provided by the provider node;

updating the condition of the path ~~characterisation~~ characterization metric in respect of data forwarded by said intermediate nodes;

monitoring a final condition of the path ~~characterisation~~ characterization metric in respect of data received by the receiver node, and determining a measure indicative of

a discrepancy between said final condition and a predetermined target condition for the path ~~characterisation~~ characterization metric; and

assigning a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data provided by the provider node in the event that said measure indicates such a discrepancy in respect of previous data.

10. (Currently Amended) A method according to claim 9, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

11. (Currently Amended) A feedback node for enabling an initial condition to be assigned to a path ~~characterisation~~ characterization metric in respect of data to be forwarded through a data network, said data network comprising a provider node, a receiver node and a plurality of intermediate nodes, said data comprising at least a part which relates to a path ~~characterisation~~ characterization metric; said provider node being arranged to assign an initial condition to the path ~~characterisation~~ characterization metric in respect of data, and to provide said data to at least one of said intermediate nodes or to the receiver node; said intermediate nodes being arranged to receive data from said provider node or from one or more other intermediate nodes, to update a condition of the path ~~characterisation~~ characterization metric in respect of data received

by them, and to forward data to at least one other intermediate node or to the receiver node; and said receiver node being arranged to receive data from at least one intermediate node or from the provider node, and to make available for the feedback node information relating to the path ~~characterisation~~ characterization metric in respect of data received by it, said feedback node comprising; ~~wherein~~

~~the feedback node is~~ at least one message processor arranged to enable a different initial condition to be assigned to the path ~~characterisation~~ characterization metric in respect of subsequent data provided by the provider node in the event that said feedback node receives information indicative of a discrepancy between a predetermined target condition for the path ~~characterisation~~ characterization metric and the condition of the path ~~characterisation~~ characterization metric in respect of previous data received by said receiver node.

12. (Currently Amended) A feedback node according to claim 11, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

13. (Currently Amended) A feedback node according to claim 11, wherein in the event that a different initial condition is assigned to the path ~~characterisation~~ characterization metric in respect of subsequent data, said different initial condition is

assigned such as to decrease a corresponding discrepancy in respect of said subsequent data received by said receiver node.

14. (Previously Presented) A feedback node according to claim 11, said feedback node also serving as said provider node in said network.

15. (Currently Amended) A feedback node according to claim 14, said feedback node being arranged to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data in the event that it receives, from said receiver node, a measure of a discrepancy between said predetermined target condition for the path ~~characterisation~~ characterization metric and the condition of the path ~~characterisation~~ characterization metric in respect of previous data received by said receiver node.

16. (Currently Amended) A feedback node according to claim 14, said feedback node being arranged to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data in the event that it receives, from said receiver node, information indicative of the condition of the path ~~characterisation~~ characterization metric in respect of previous data received by said receiver node, and determines that there is a discrepancy between said condition of the path

~~characterisation~~ characterization metric and said predetermined target condition for the path ~~characterisation~~ characterization metric.

17. (Previously Presented) A feedback node according to claim 11, said feedback node also serving as said receiver node in said network.

18. (Currently Amended) A feedback node according to claim 17, said feedback node being arranged to make available for the provider node a measure of a discrepancy between said predetermined target condition for the path ~~characterisation~~ characterization metric and the condition of the path ~~characterisation~~ characterization metric in respect of previous data received by said receiver node, whereby to enable said provider node to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data.

19. (Currently Amended) A feedback node according to claim 17, said feedback node being arranged to make available for the provider node information indicative of the condition of the path ~~characterisation~~ characterization metric in respect of previous data received by said receiver node, whereby to enable said provider node to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data in the event that said provider node determines that there is a

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discrepancy between said condition of the path ~~characterisation~~ characterization metric and said predetermined target condition for the path ~~characterisation~~ characterization metric.

20. (Currently Amended) A method of providing data in a data network comprising a provider node, a receiver node and a plurality of intermediate nodes, the provider node being arranged to provide data to at least one of said intermediate nodes or to the receiver node, said data comprising at least a part which relates to a path ~~characterisation~~ characterization metric; said intermediate nodes being arranged to receive data from said provider node or from one or more other intermediate nodes, to update a condition of the path ~~characterisation~~ characterization metric in respect of data received by them, and to forward data to at least one other intermediate node or to the receiver node; and said receiver node being arranged to receive data from at least one intermediate node or from the provider node, and to make available for the provider node information indicative of a discrepancy between an eventual condition of the path ~~characterisation~~ characterization metric in respect of data received by it and a predetermined target condition for the path ~~characterisation~~ characterization metric; the method comprising ~~the steps of:~~

assigning an initial condition to the path ~~characterisation~~ characterization metric in respect of data;

providing said data to at least one of said intermediate nodes;
receiving information relating to said eventual condition of the path
~~characterisation~~ characterization metric in respect of previously-provided data received
by said receiver node; and
assigning a different initial condition to the path ~~characterisation~~ characterization
metric in respect of subsequent data in the event of receipt of information indicative of a
discrepancy between said eventual condition of the path ~~characterisation~~
characterization metric and a predetermined target condition for the path
~~characterisation~~ characterization metric.

21. (Currently Amended) A method according to claim 20, wherein the condition
assigned to the path ~~characterisation~~ characterization metric is a value, and the
predetermined target condition is a value.

22. (Currently Amended) A method according to claim 20, said receiver node
being arranged to make available for the provider node a measure of a discrepancy
between said predetermined target condition for the path ~~characterisation~~
characterization metric and said eventual condition of the path ~~characterisation~~
characterization metric in respect of previous data received, whereby to enable said

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provider node to assign a different initial condition to the path ~~characterisation~~
characterization metric in respect of subsequent data.

23. (Currently Amended) A method according to claim 20, said receiver node being arranged to make available for the provider node information indicative of the condition of said eventual path ~~characterisation~~ characterization metric in respect of previously received data, whereby to enable said provider node to assign a different initial condition to the path ~~characterisation~~ characterization metric in respect of subsequent data in the event that said provider node determines that there is a discrepancy between said condition of the path ~~characterisation~~ characterization metric and said predetermined target condition for the path ~~characterisation~~ characterization metric.

24. (Currently Amended) A method for providing path ~~characterisation~~
characterization information for nodes in a network, said network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver

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node being arranged to receive data from the provider node or from at least one intermediate node; the method comprising ~~steps of~~:

assigning an initial condition to a path ~~characterisation~~ characterization metric in the event that said provider node provides data, said path ~~characterisation~~ characterization metric being associated with said data;

updating the condition of the path ~~characterisation~~ characterization metric in the event that an intermediate node receives said data;

determining an eventual condition of the path ~~characterisation~~ characterization metric in the event that said receiver node receives said data; and

establishing if a discrepancy exists between the eventual condition of the path ~~characterisation~~ characterization metric and a predetermined target condition;

wherein, in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition, said method further comprises ~~steps of~~:

assigning a different initial condition to a further path ~~characterisation~~ characterization metric in the event that said provider node subsequently provides further data, said further path ~~characterisation~~ characterization metric being associated with said further data;

updating the condition of said further path ~~characterisation~~ characterization metric in the event that an intermediate node receives said further data; and

making information indicative of said updated condition available to said intermediate node.

25. (Currently Amended) A method according to claim 24, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

26. (Currently Amended) A method for providing path ~~characterisation~~ characterization information for nodes in a network, said network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node; the method comprising ~~steps of:~~

assigning an initial condition to a path ~~characterisation~~ characterization metric in the event that said provider node provides data, said path ~~characterisation~~ characterization metric being associated with said data;

updating the condition of the path ~~characterisation~~ characterization metric in the event that an intermediate node receives said data;

determining an eventual condition of the path ~~characterisation~~ characterization metric in the event that said receiver node receives said data; and

establishing if a discrepancy exists between the eventual condition of the path ~~characterisation~~ characterization metric and a predetermined target condition;

wherein, in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition, said method further comprises ~~steps of~~:

assigning an initial condition to a further path ~~characterisation~~ characterization metric in the event that said provider node subsequently provides further data, said further path ~~characterisation~~ characterization metric being associated with said further data;

updating the condition of said further path ~~characterisation~~ characterization metric in the event that an intermediate node receives said further data;

making information indicative of said updated condition available to said intermediate node; and

making information relating to the discrepancy between the eventual condition of a previous path ~~characterisation~~ characterization metric and said predetermined target condition available to said intermediate node.

27. (Currently Amended) A method according to claim 26, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

28. (Currently Amended) A path ~~characterisation~~ characterization system for providing path ~~characterisation~~ characterization information in association with a data network, said data network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node; the path ~~characterisation~~ characterization system comprising:

a path ~~characterisation~~ characterization metric condition assigning means, associated with the provider node, arranged to assign an initial condition to a path ~~characterisation~~ characterization metric in the event that said provider node provides data;

a path ~~characterisation~~ characterization metric updating means, associated with an intermediate node, arranged to update the condition of the path ~~characterisation~~ characterization metric in the event that said node receives data; and

a path ~~characterisation~~ characterization metric feedback means, associated with the receiver node, arranged to determine an eventual condition of the path ~~characterisation~~ characterization metric in the event that said receiver node receives said data, and to make available for the path ~~characterisation~~ characterization metric condition assigning means information indicative of a discrepancy between the eventual condition of the path ~~characterisation~~ characterization metric and a predetermined target condition for the path ~~characterisation~~ characterization metric; wherein

said path ~~characterisation~~ characterization metric condition assigning means is arranged to assign a different initial condition to a path ~~characterisation~~ characterization metric associated with subsequent data in the event that feedback is made available indicative of such a discrepancy between the eventual condition of the path ~~characterisation~~ characterization metric and the predetermined target condition in relation to a previous path ~~characterisation~~ characterization metric.

29. (Currently Amended) A path ~~characterisation~~ characterization system according to claim 28, wherein the condition assigned to the path ~~characterisation~~ characterization metric is a value, and the predetermined target condition is a value.

30. (Currently Amended) A path ~~characterisation~~ characterization system for providing path ~~characterisation~~ characterization information in association with a data

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network, said data network comprising a plurality of nodes including a provider node, a receiver node, and at least one intermediate node, the provider node being arranged to provide data to at least one intermediate node or to the receiver node, an intermediate node being arranged to receive data and to forward data to at least one other intermediate node or to the receiver node, and the receiver node being arranged to receive data from the provider node or from at least one intermediate node; the path ~~characterisation~~ characterization system comprising:

a path ~~characterisation~~ characterization metric condition assigning means, associated with the provider node, arranged to assign a path ~~characterisation~~ characterization metric with an initial condition in the event that said provider node provides data, said path ~~characterisation~~ characterization metric being associated with said data;

a path ~~characterisation~~ characterization metric updating means, associated with a node capable of receiving data, arranged to update the condition of the path ~~characterisation~~ characterization metric in the event that said node receives data; and

a path ~~characterisation~~ characterization metric feedback means, associated with the receiver node, arranged to determine an eventual condition of the path ~~characterisation~~ characterization metric in the event that said receiver node receives said data, and to make available for the path ~~characterisation~~ characterization metric

condition assigning means information relating to the eventual condition of the path
~~characterisation~~ characterization metric; wherein

said path ~~characterisation~~ characterization metric condition assigning means is
arranged to provide information relating to the eventual condition of the path
~~characterisation~~ characterization metric associated with previous data in the event that
feedback is made available indicative of ~~[[such]]~~ a discrepancy between the eventual
condition of the path ~~characterisation~~ characterization metric and ~~[[the]]~~ a predetermined
target condition in relation to a previous path ~~characterisation~~ characterization metric.

31. (Currently Amended) A path ~~characterisation~~ characterization system
according to claim 30, wherein the condition assigned to the path ~~characterisation~~
characterization metric is a value, and the predetermined target condition is a value.

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AMENDMENTS TO THE DRAWINGS:

Applicants submit herewith two (2) sheets of annotated drawings illustrating Figs. 1 and 2 with proposed changes shown in red ink, accompanied by two (2) replacement sheets incorporating the amendments.

Attachments: Replacement Sheets: (2)
Annotated Sheets Showing Changes: (2)

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REMARKS/ARGUMENTS

Reconsideration of this application is respectfully requested.

As the Examiner is already aware, there is a co-pending related application Serial No. 10/593,442 being concurrently examined by this same Examiner. Although the Examiner is undoubtedly already familiar with events in that related application, under what appears to be current "duty of disclosure" protocol, the Examiner's attention is directed to the attached Form PTO/SB/08a and documents cited therein and attached hereto as appropriate, including prior office actions in the related case as well as all prior documents therein cited which are not already of record in the present application. The IDS Fee for this stage of prosecution is also attached. If the Examiner wishes to have continuing "follow-up" submissions of subsequent office actions and prior art citations from the related case into the present case, even though the same Examiner is handling both cases, it is respectfully requested that such desire be made of record so that the undersigned can attempt to provide continuing updates in the future.

As requested, a replacement sheet for Fig. 1 including the legend "prior art" is submitted herewith. In addition, a replacement sheet for Fig. 2 is likewise submitted herewith, wherein reference character "26" on the left side of the drawing has been corrected to read "20".

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In response to the rejection of claims 4, 5, and 13 under 35 U.S.C. §112, second paragraph, the phrase "such as" has been deleted from these claims. In addition, the Americanized spelling of "characterization" has been substituted throughout the claims and claim 30 has also been amended so as to avoid use of the term "such" and to ensure proper antecedent basis. The Americanized spelling of "maximized" has also been substituted in claim 5.

Minor corrections have also been made to the abstract and specification.

Accordingly, all outstanding formality-based issues are now believed to have been resolved in the applicants' favor.

The rejection of claims 1-3, 6-12, 14-16, 20-23 and 28-31 under 35 U.S.C. §102 as allegedly anticipated by Cain '469 is respectfully traversed.

The technique disclosed in Cain relates to routing within a network, and uses a feedback loop which is used for managing Quality of Service (QoS) in the network. Cain, in fact, relates to an admission control system, the nodes of which are operable to police admitted traffic to ensure that once accepted/admitted, the admitted traffic does not then exceed the criteria according to which it was accepted.

In more detail, in Cain, a "Route Request" message (RREQQ) is sent from a source node towards a destination node via a plurality of intermediate nodes, the message containing a traffic flow identifier setting out a required QoS for a route. The

first intermediate node assesses whether it can meet the requirement and then accepts or rejects the request. If it accepts the request, it forwards the route request message to the next intermediate node, and this continues either until an intermediate node refuses the request or until the message reaches the intended destination node. If all the intermediate nodes do accept the request on a particular route to a predetermined destination, they then police forwarded traffic as explained above and provide the required QoS for the accepted request.

It appears reasonable to regard the route request messages (RREQQ) of Cain as data containing path characterization information of some sort as they traverse from the source node to the destination node via the intermediate nodes (since these messages contain QoS metrics). It also appears reasonable to regard the source node of Cain as performing a function corresponding to the initial function of the provider node of the present invention, this initial function being "to assign an initial condition to the path characterization metric" in respect of data it provides. Finally, it appears reasonable to regard the intermediate nodes of Cain as corresponding to the "intermediate nodes" of the present invention, whose function is "to update the condition of the path characterization metric" in respect of data they forward.

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It is in relation to the function of the receiver node and the subsequent function of the provider node that the functions of Cain's nodes do not have corresponding functionality to the applicants' claimed nodes. According to applicants' claim 1, the receiver node:

"...is arranged to make available for the provider node information indicative of a discrepancy between the condition of the path characterization metric in respect of data received by it and a predetermined target condition for the path characterization metric";

and the provider node:

"...is arranged to assign a different initial condition to the path characterization metric in respect of subsequent data provided by it in the event that it receives information indicative of such a discrepancy from said receiver node".

It should be noted that Cain does not disclose anything corresponding to a "target condition for the path characterization metric". Cain, therefore, also fails to disclose any step of feeding back "*information indicative of a discrepancy between the condition of the received path characterization metric and the target condition for the path characterization metric*". Thus, the functionality of Cain's "destination node" does not correspond to the functionality of the applicants' receiver node. Following on from this, Cain's "source node", therefore, cannot perform a function corresponding to the subsequent function of the applicants' "provider node" because there are no circumstances under which it receives "*information indicative of such a discrepancy from*

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said receiver node". Thus, the functionality of Cain's "source node" does not fully correspond to the functionality of the applicants' "provider node".

In relation to the sub-paragraph of claim 1 in which the "receiver node" is defined, the Examiner refers to Cain's paragraph [0033], and the generation by the destination node of the reply RREPQ. It will be noted from this paragraph that replies RREPQ are said to include the flow identifier and updated QoS link metric for each discovered route. There is, however, no suggestion that the replies RREPQ contain any "*information indicative of a discrepancy between the condition of the path characterization metric in respect of data received by it and a predetermined target condition for the path characterization metric*".

In fact, as Cain's replies RREPQ are only returned from the destination in the event that the requested QoS can be met over the path in question, there is no situation in which replies RREPQ could be said to indicate a discrepancy of any sort between the condition of any path characterization metric and any predetermined target condition, because replies RREPQ explicitly would not be sent in the event that there is a disparity between the requested QoS and the QoS that can be provided on the path in question.

The Examiner's analysis of the final two sub-paragraphs of claim 1 is clearly erroneous. In particular, the Examiner alleges that Cain discloses a data network in which information is fed back from a receiver node to a provider node relating to a discrepancy between the condition of the received path characterization metric and the

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target condition for the path characterization metric. This is clearly not disclosed in Cain – nor is it commonplace. This was not apparently previously known in this technological field or even in any sufficiently-related technological field. A difference that should be appreciated is between the feeding back of information relating to a discrepancy (as is done according to the applicants' invention) and the feeding back of information simply relating to a final condition (which the applicants accept can reasonably be regarded as "normal" in relation to feedback mechanisms in networks).

The difference is, in fact, perhaps subtle, but surprisingly important, and results in significant advantages, which are explained in detail in the applicants' specification, but which can be summarized briefly as follows.

- Firstly, and most fundamentally, by feeding back information relating to a discrepancy between the condition of the received path characterization metric and the target condition for the path characterization metric, it becomes possible for the path characterization metrics in respect of "subsequent data" to provide intermediate nodes with information relating to the path further downstream (i.e., the path between the intermediate node that the data has reached and the eventual receiving point). This downstream path information enables intermediate nodes to take routing decisions in the light of information that is not provided to them by prior art techniques. This fundamental difference is explained in particular in the

section from page 18, line 22 to page 19, line 32, and in the paragraph bridging pages 22 and 23 of the applicants' specification.

- Secondly, it removes the incentives present in prior art mechanisms for nodes to act "dishonestly" (e.g., in embodiments where the characteristic is "congestion", the invention removes the incentive for nodes to "over-declare" or "under-declare" the actual level of congestion), as there is nothing to be gained by doing so. With the incentives to act dishonestly removed, nodes are essentially incentivized to act honestly, and to provide correct information. This is explained further on pages 29 and 30 of the description.

The differences explained above in relation to claim 1 and the advantages resulting therefrom are also applicable in relation to all other independent claims. For this reason, detailed comments on these need not be provided, but the following is a brief summary of what each independent claim relates to, in order to assist the Examiner with any further analysis of the claims:

- Claim 1: An "apparatus" claim relating to the whole network (i.e., provider node, receiver node, and a plurality of intermediate nodes).
- Claim 9: A "method" claim corresponding to claim 1 (i.e., the method, as performed by a whole network such as that of claim 1).

- Claim 11: An “apparatus” claim relating to a single “feedback node” (i.e., this may be the provider node or the receiver node, depending on which of these is arranged to have the capability set out in the final sub-paragraph).
- Claim 20: A “method” claim corresponding to claim 11 with the provider node serving as the “feedback node”.
- Claim 24: A “method” claim similar to claim 9, but included in order to cover a variant of the type discussed in the final paragraph of page 9
- Claim 26: A “method” claim similar to claim 9, but included in order to cover the variant discussed in the paragraph bridging pages 10 and 11.
- Claim 28: An “apparatus” claim corresponding to claim 24 (i.e., a system arranged to perform the “variant” method of claim 24).
- Claim 30*: An “apparatus” claim corresponding to claim 26 (i.e., a system arranged to perform the “variant” method of claim 26).

Given such fundamental deficiencies of Cain as already discussed, it is not necessary to detail additional deficiencies of Cain with respect to other aspects of the rejected claims. Suffice it to note that, as a matter of law, it is impossible for a reference to anticipate any claim unless it teaches each and every feature of the rejected claim.

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The rejection of claims 4, 5 and 13 under 35 U.S.C. §103 as allegedly being made "obvious" based on Cain in view of Kalyanasundaram '311 is also respectfully traversed.

Fundamental deficiencies of Cain have already been noted above with respect to parent claims 1 and 11. Kalyanasundaram does not supply those deficiencies. Accordingly, it is not necessary at this time to detail additional deficiencies of this allegedly "obvious" combination of references with respect to other aspects of these rejected claims. Suffice it to note that, as a matter of law, it is impossible to support even a *prima facie* case of "obviousness" unless the cited prior art teaches or suggests each and every feature of the rejected claim.

The rejection of claims 17-19 under 35 U.S.C. §103 as allegedly being made "obvious" based on Cain in view of Tanaka '538 is also respectfully traversed.

Once again, fundamental deficiencies of Cain have already been noted above with respect to parent claim 11. Tanaka does not supply those deficiencies. Accordingly, it is unnecessary at this time to detail additional deficiencies of this allegedly "obvious" combination of references for reasons already noted above.

The rejection of claims 24-27 under 35 U.S.C. §103 as allegedly being made "obvious" based on Cain in view of Ozugur '901 is also respectfully traversed – for similar reasons. In addition, the Examiner's comments with respect to this allegedly

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"obvious" combination of references is further analyzed below to demonstrate yet further deficiencies for independent claims 24 and 26.

In relation to claim 24, it will be noted that the Examiner is still relying on Cain's teaching in respect of the steps of:

"establishing if a discrepancy exists between the eventual condition of the path characterization metric and a predetermined target condition;"

and (in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition)

"assigning a different initial condition to a further path characterization metric in the event that said provider node subsequently provides further data, said further path characterization metric being associated with said further data."

As will be understood from the explanation given above in relation to claim 1, Cain does not, in fact, teach anything corresponding to "a *predetermined target condition*" for the path characterization metric and is, therefore, unable to establish a discrepancy between such a target condition and an eventual condition of the path characterization metric. Cain, therefore, fails to teach a method which includes either of the above two steps.

Ozugur also provides no teaching of a method including these steps. Thus, even a combination of the teachings of Cain and Ozugur would not lead a person of ordinary skill in the art to perform a method according to claim 24.

Similarly, in relation to claim 26, it will be noted that the Examiner is still relying on Cain's teaching in respect of the steps of:

"establishing if a discrepancy exists between the eventual condition of the path characterization metric and a pre-determined target condition;"

(in the event that it is established that a discrepancy does exist between said eventual condition and said predetermined target condition):

"assigning an initial condition to a further path characterization metric in the event that said provider node subsequently provides further data, said further path characterization metric being associated with said further data;"

and

"making information relating to the discrepancy between the eventual condition of a previous path characterization metric and said predetermined target condition available to said provider node". (NB: Not the "intermediate node" as would be required for claim 26.)

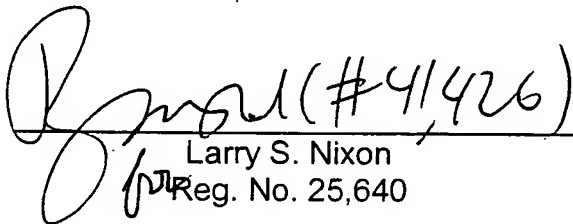
Again, as will be understood from the explanation given above in relation to claim 1, Cain does not, in fact, teach anything corresponding to *"a predetermined target condition"* for the path characterization metric and is, therefore, unable to establish a discrepancy between such a target condition and an eventual condition of the path characterization metric. Cain, therefore, fails to teach a method which includes either of the above three steps. Again, Ozugur provides no teaching of a method including these steps. Thus, even a combination of the teachings of Cain and Ozugur would not lead a person of ordinary skill in the art to perform a method according to claim 26.

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Accordingly, this entire application is now believed to be in condition for allowance, and a formal notice to that effect is earnestly solicited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By:  (#41,426)
Larry S. Nixon
Reg. No. 25,640

LSN:lef

901 North Glebe Road, 11th Floor
Arlington, VA 22203-1808
Telephone: (703) 816-4000
Facsimile: (703) 816-4100

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ANNOTATED MARKED UP DRAWINGS
FOR SN 10/593, 423

+	0 - 3	4 - 7	8 - 15	16-18	19 - 31
0	Version	Header Length	Type of Service (now DiffServ and ECN)	Total Length	
32	Identification			Flags	Fragment Offset
64	Time to Live		Protocol	Header Checksum	
96	Source Address				
128	Destination Address				
160	Options				
192	Data				

Figure 1: Header Format according to IPv4

(PRIORITY)

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ANNOTATED MARKED UP DRAWINGS
FOR SN 10/593,423

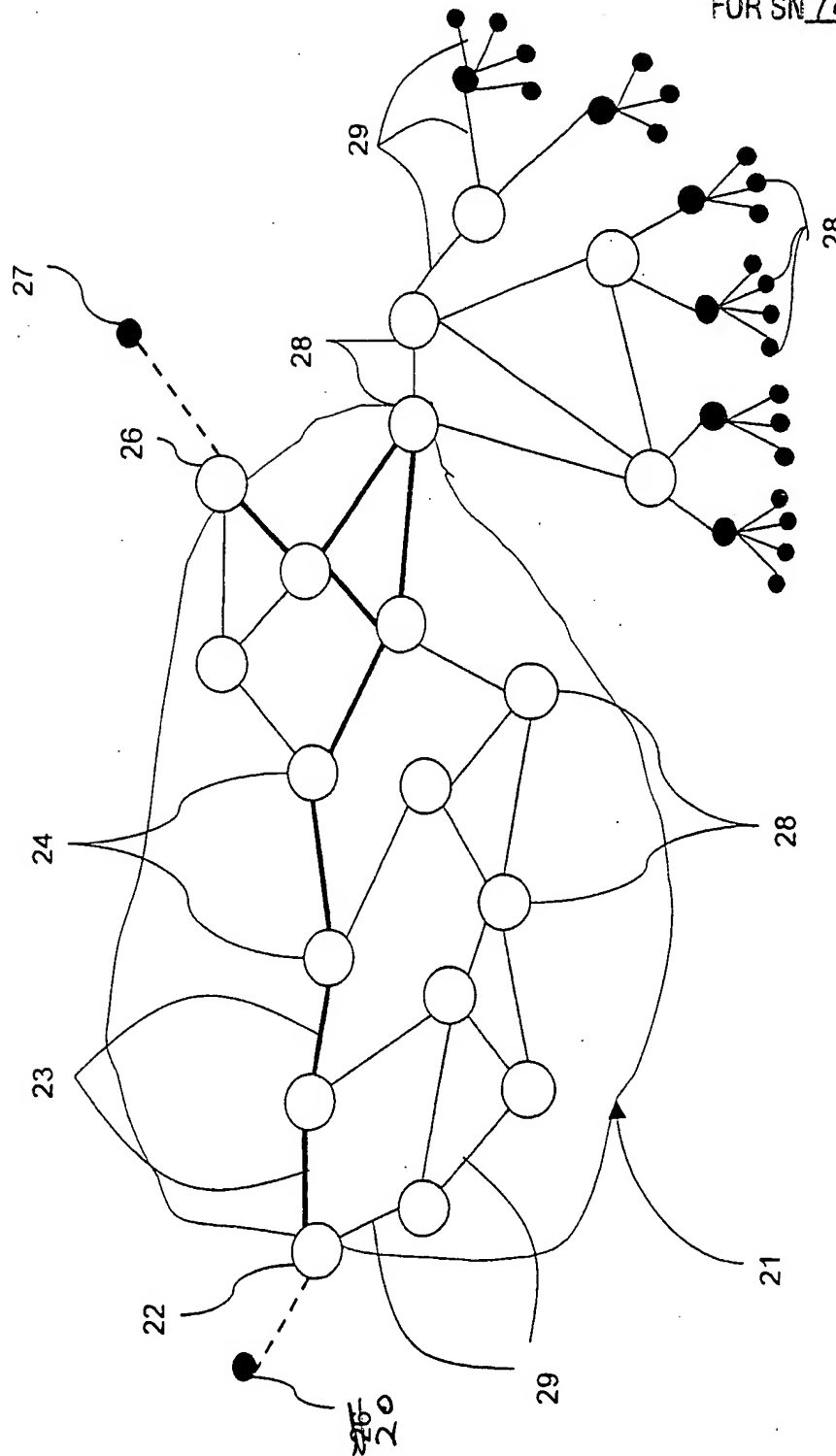


Figure 2: Representation of a Network

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+	0 - 3	4 - 7	8 - 15	16-18	19 - 31
0	Version	Header Length	Type of Service (now DiffServ and ECN)	Total Length	
32	Identification			Flags	Fragment Offset
64	Time to Live		Protocol	Header Checksum	
96	Source Address				
128	Destination Address				
160	Options				
192	Data				

Figure 1: Header Format according to IPv4
(PRIOR ART)

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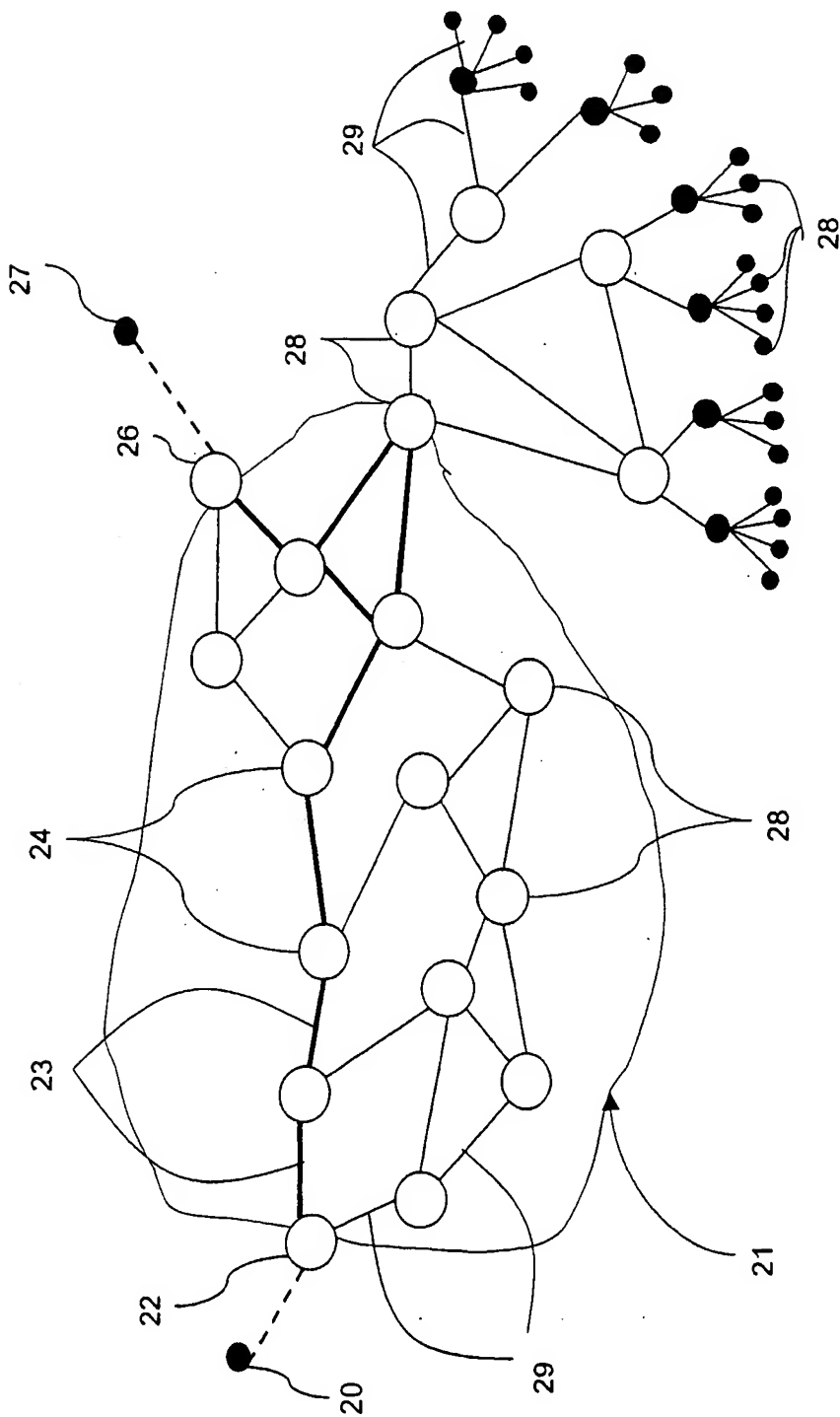


Figure 2: Representation of a Network